

MAROTTI, L.

The automotive industry and radioactive isotopes. III. p. 6, AUTO
MOTOR (Kozlekedszi Kiado) Budapest, Vol. 9, No. 15, Aug. 1956

SOURCE: East European Accessions List (EEAL) Library of Congress,
Vol. 5, No. 11, November 1956

H/008/60/013/012/006/008
B009/B057

AUTHORS: Fodor, József; Keömley, Gábor; and Maróti, Lajos

TITLE: Application of Radioisotopes in Wear Testing

PERIODICAL: Energia és Atomtechnika, 1960, Vol. 13 No. 12, pp. 563-570

TEXT: This is a synopsis of numerous publications on engine wear testing and on progress made therein by the application of radiotracers. Conventional measuring methods (measurement of weight loss, of changes of dimensions, of special markings, analysis of abrasion products in lubricating oil) are described, and their shortcomings are pointed out. The principle of the tracer method is explained according to Guest's book (Ref. 3), and its advantages are pointed out. The preparation of the test specimen by alloying with radioactive metals (formula of Wissotsky Savel'skiy, Ref. 4), by electroplating, by the insertion of tracer inserts (Fig. according to P. Y. Dvachenko and D. V. Nyianvovich, Ref. 10), by activation in the atomic pile (measurements of J. H. Deterding and J. R. B. Calow, Ref. 6), and by subsequent activation and analysis of the

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Application of Radionuclides in Wear
Testing

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B009/B057

abrasion products (W. W. Schultz and co-workers, Ref. 7). The measuring setup is illustrated by a drawing of Dyachenko and Nyisnyevich (Ref. 10) and the necessary precautions for radiation protection are recommended. Autoradiography is applied for detecting the character of engine wear. J. Fodor, one of the authors of the present article, published a paper on this subject in *Energia and Atomtehnika* May 1959 (Ref. 8). At the Tools Research Institute of the Soviet Academy of Science, the wear on tool tips was thus traced back to the granular structure of the tips, the refinement of which led to an increased service life of the tool tips. The authors conclude that no general conclusions have so far been drawn from research on wear by the tracer method. The most modern testing method was presented in 1959 by Deterding and Calow who measured wear on piston rings of automotive engines in road service with a scintillation counter and recording equipment. In Hungary, joint tests were conducted on tires by the Radionuclide Laboratory of Csapel and the Research Laboratory for the Rubber Industry. The Csillebors research reactor, put into operation in 1959, took care of the activation of tool tips for the Csapel Radionuclide Laboratory and of the activation of piston rings for the

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Application of Radioisotopes in Wear
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B009/B057

wear-testing Radioisotope Laboratory of the Vehicle Development Institute. The last-mentioned institute and the Ganz-MAVAG Works are engaged in determining the wear characteristics of bearings with linings containing active tin isotopes cast at the laboratory of the Institute. There are 7 figures, 1 table, and 10 references: 2 Soviet, 3 Hungarian, 2 German and 2 US.

ASSOCIATION: Járműfejlesztési Intézet Radioizotóp Laboratoriuma (Vehicle
Development Institute Radioisotope Laboratory)

Card 3/3

MAROTI, Laszlo

International show of railroad construction at the Szombathely
Directorate of the Hungarian State Railways. Vasut 14 no.7:8-9
Jl '64.

MAROTI, Basalo

A new railroad bridge over the river was built in 1964.
Je 1964.

MAROTI, MIHÁLY

✓ Synthesis of nucleic acid phosphorus in the root and shoot of bean seedling. N. G. Potapov and Mihály Maróti (Kötevény Lőránd Tudományegyetem, Növényélettani Intézet, Budapest). *Agrokémia és Talajtan* 5: 57-68 (1956). The data on P metabolism are completed by measuring the changes in length and dry matter content of the individual organs. *Phaseolus vulgaris* was used. Seeds sterilized in a 1% Br soln. were left to germinate for 2, 4, and 6 days. In one sample of the germinated seedlings the individual organs were analyzed whereas from the rest root and shoot excisions were made and analyzed after incubation for 6 days. For nucleic acid P determination the method of Taylor and Miller as modified by Roth and Lavib-Harrington-Buckaloo was used. The isolated root, just as that of the intact plant, grows more vigorously in length than does the young shoot. Dry matter increases in the shoot more rapidly than in the root. Total P as well as nucleic acid P per organ is higher in the root. The nucleic acid-dry matter ratio is higher in the shoot of the intact plant, whereas in isolated organs the reverse is true. The evidence supports the hypothesis that, contrary to the root, the isolated shoot cannot synthesize nucleic acid P in the quantity to supply its own requirements. In intact plants migration from the roots probably provides the shoot with the required supply of nucleic acid P. N. Hellinger

MAROTI, M

✓ The synthesis of nucleophosphoric acid in the root and sprout of bean seed. N. G. Potapov and M. Maróti (Pflanzenphysiol. Inst. Loránd Eötvös Univ., Budapest). *Acta Botan. Acad. Sci. Hung.* 11, 377-90(1958)(in German).
 — Bean (*Phaseolus vulgaris*) seeds were disinfected in 1% Br water and germinated in 1% agar-agar contg. minerals, sucrose, and yeast ext. for 2, 4, and 6 days. From approx. half the germinated plants the roots and sprouts were excised and grown for 6 days on a sterile, sugar-vitamin mixt. at 27-28° in natural light. Measurements and analyses were made on roots and sprouts from the groups at the beginning and the end of the exptl. period. The roots of the intact plants showed a 30-fold increase in length: (I) for the 6-day period, an increase (94.6-298.9 γ) of total P (II) per root in the 4-6 day period, and a 10-fold (7.9-93.8 γ) increase per root of nucleoprotein P (III) in the 2-6 day period. Results from the other groups were: for the sprouts of intact plants, a 2-fold increase in I, no change in II, and a 3-fold increase (2.3-7.7 γ) in III; for the excised roots, a 10-fold increase in I, an increase (223.3-377.1 γ) in II, and a 10-fold increase (11.2-121.5 γ) in III; for the excised sprouts, a 2-fold increase in I, and no change in II and III. At the end of the 6-day period the intact roots contained 7-15% dry wt., the intact sprouts, 17-25%, the excised roots and sprouts, 8-14%. The failure of the isolated sprout to synthesize nucleic acid P confirms evidence that the root of the young beanling is autotrophic and the sprout heterotrophic.
 L. N. Ellis

2

med

MAROTI, M.

Quantitative changes in the deoxyribonucleic and ribonucleic acid content of the cells of pea root. J. Sudi and M. Maroti (Lorand Eotvos Univ. Budapest). *Acta Botan. Acad. Sci. Hung.* 3, 65-77(1957).—The 10-mm. long root tips of pea seedlings (*Pisum sativum*) were cut into 10 successive 1-mm sections. Deoxyribonucleic acid (DNA), ribonucleic acid (RNA), total P, dry matter, and an av. cell vol. were detd. on each section. The age of the cells were calcd. roughly and from this value changes in nucleic acid content of the av. root cell was described in the function of time. A 4-fold increase was found during elongation in the DNA content of the av. root cell, associated with a 60% decrease in its RNA content. A 16-fold increase was found during the same period in the av. cell volume. Dry matter increased 6-fold and P 8-fold during this same period.

James E. Webster

COUNTRY :

CATEGORY : PLANT PHYSIOLOGY

АТТ. СУР. : 111 20 1998 Б.О. ДГИЯ. № 4, 1989.

ACTIOR :

1951.

ORIG. PUB. :

1. The following information was obtained from the
 2. records of the Department of the Interior, Bureau of
 3. Land Management, Washington, D. C., dated 10/1/54.
 4. The following information was obtained from the
 5. records of the Department of the Interior, Bureau of
 6. Land Management, Washington, D. C., dated 10/1/54.
 7. -- T.V. HARRIS

CARD:

27

MARTI, E.

The change in the cell number and in the nucleic acid content of seedlings.

In English. n. 27.

(Acta Biologica. Vol. 1, no. 2/3, 1957. Budapest.)

See: Monthly List of East European Acquisitions (MEL) Lc, Vol. 1, no. 1, June 1957. p. 1.

MAROTI, Mihaly (Budapest, VIII., Múzeum korut 4/a)

The first Hungarian researcher of plant cytology and physiology;
in commemoration of Lajos Juranyi on the 120th anniversary of
his birth and the 60th anniversary of his death. Botan kozl 47
no.3/4:239-243 '58.

MAROTI, Mihaly (Budapest, VIII., Múzeum körút 4/a)

Metabolism of starving meristematic cells. Botan kozl 47
no.3/4:244-253 '58.

1. Magyar Biológiai Társaság Botanikai Szakosztályának választ-
mányi titkara.

MAROTI, M.

Metabolism of starving meristematic cells. p. 244.

BOTANIKAI KOZLEMENYEK. (Magyar Biológiai Társaság. Botanikai Szakosztály)
Budapest, Hungary. Vol. 47, no. 3/4, 1958

Monthly list of East European Accessions (EEAI), LC, Vol. 8, no. 7, July 1959
uncl.

MAROTI, M.

Comparative metabolic tests on vegetal organic cultures. I. Length of growth, weight increase, and alteration of cell numbers of isolated organisms. In German. Acta bot. Hung. 5 no. 3/4:399-411 '59.

(KBAI 9:5)

1. Pflanzenphysiologisches Institut, Budapest und Biologische Station, Alsogod or L. Eotvos Universitat.
(Plants)

MAROTI, Mihaly

Physiological and biochemical characteristics of the meristematic regions of root and bud; a literary survey. Biol kozl 6 no.2: 103-118 '59.

1. Eotvos Lorand Tudomanyegyetem Novenyeletteni Intezete, Budapest.

*

MAROTI, Mihaly

Research in plant physiology in the Soviet Union. Botan kozl
48 no.1/2:3-8 '59.

1. Eotvos Lorand Tudomanyegyetem Novenyeletteni Intezete, Buda-
pest, VIII., Múzeum korut 4/a, es Magyar Biologiai Tarsasag
Botanikai Szakosztalyanak intezobizottsagi tagja.

MAROTI, Mihaly (Budapest, VIII., Múzeum korut 4/a); SCHEURING, Janosne
(Budapest, VIII., Múzeum korut 4/a)

A new root disk cutting device. Botan kozl 48 no.1/2:18-21
'59.

1. Magyar Biológiai Társaság Botanikai Szakosztályának
intézőbizottsági tagja (for Maroti).

MAROTI, M.

Comparative metabolic tests on vegetal organic cultures. II. Nitrogen metabolism in isolated young roots and sprouts. Acta bot Hung 6 no.1/2: 55-64 '60. (EEAI 10:3)

1. Pflanzenphysiologisches Institut, Budapest und Biologische Station, Alsogod der L.Eotvos Universitat.
(Plants) (Nitrogen)

MAROTI, M.

Metabolic investigation of the roots of sugar beet shoots. Acta bot
Hung 6 no.3/4:321-341 '60. (EEAI 10:6)

1. Pflanzenphysiologisches Institut (Budapest) Biologische
Station (Alsogod) der L.Eotvos Universitat.
(Sugar beets)

MAROTI, Mihaly

Development in organ cultures. Biol kozl 8 no.2:125-131 '60.

1. Eotvos Lorand Tudomanyegyetem Novenyeletteni Intezete,
Budapest.

*

MAROTI, Mihaly

Comparative investigations of metabolism in culture of plant organs.
III. Phosphorous metabolism of young roots and shoots in isolated
cultures. IV. Qualitative analysis of free amino acids in isolated
organs. Acta biol Hung 10 no.3/4:273-298 '60. (EEAI 9:12)

1. Pflanzenphysiologisches Institut, Budapest und Biologische
Station, Alsogod der Lorand Eotvos Universitat (Vorstand: V.Frenyo)
(PHOSPHORUS) (PLANTS) (PUMPKIN) (AMINO ACIDS)

MAROTI, Mihaly (Budapest, VIII., Múzeum körút 4/a)

On the DNS-P content of plant cells. Botan közl 48 no.3/4:182-187 '60.

1. Magyar Biológiai Társaság Botanikai Szakosztályának
intezbizottsági tagja.

EGYEDI, Laszlo [deceased]; MAROTI, Mihaly (Budapest VIII., Muzeum Korut
4/a)

Investigation fo the effect of biogen stimulants on plants.
Botan kozl 49 no.1/2:47-53 '61.

1. Magyar Biologiai Tarsasag Botanikai Szakosztalyanak intezo-
Bizottsagi tagja (for Maroti),

MAROTI, M.

Some factors of cell growth in the maize roots. Acta bot Hung
8 no.3/4:303-316 '62.

1. Pflanzenphysiologisches Institut, Budapest, und Biologische
Station (Alsogod) der Lorand Eotvos Universitat.

MAROTI, Mihaly (Budapest, VIII., Múzeum körút 4/a)

Role of nucleic acids and proteins in the growth of the maize root cells. Botan közl 49 no.3/4:214-220 '62.

1. Magyar Biológiai Társaság Botanikai Szakosztályának intézőbizottsági tagja.

MAROTI, Mihaly, dr., egyetemi docens, kandidatus

What are chloroplasts and what should we know about their
evolution? Elovilag 6 no.1:32-43 Ja-F '61.

MAROTI, Mihaly, dr., egyetemi docens, a biológiai tudományok kandidátusa

Relationship between phytophysiology and plant growing. Elovilag
6 no.5:26-32 S-O '61.

MAROTI, Mihaly, dr., egyetemi docens, kandidatus

Problems relating to the culture of plant organs, tissues
and cells. Elovilag 7 no.3:8-20 My-Je '63.

1. "Elovilag" szerkeszto bizottsagi tagja.

MAROTI, M.

Nucleic acid content changes in the polyploid root cells of mangel-
wurzel. Acta bot Hung 9 no.1/2:105-116 '63.

1. Pflanzenphysiologisches Institut, Budapest, und Biologische
Station der Lorand Eotvos Universitat, Alsogod.

MAHOTI, Mihaly, dr.

The Alsogod Biological Station of the Lorand Eotvos University.
Elovilag 9 no.4:24-30 J1/Ag '64.

MAROTI, Mihaly (Budapest, VIII., Múzeum körút 4/a)

Metabolism of isolated parrot tip cells. Nature 202: 511-512
101-102 Ag 1974.

MARTI, C.

Report of the University of Economic Sciences. p. C. TON-TETTELIS.
Budapest. Vol. 9, No. 8/9, Aug./Sept. 1956

SOURCE: East European Accessions List (EEAL) Library of Congress
Vol. 5, No. 6, June 1956

MIROSHNICHENKO, N.; MAROV, G.; TRILOBOV, I.

Service industries in the Kuznetsk Basin. Mst.prom. 1 khud.promys 4 no.3:
7-10 Mr '63. (MIRA 16:4)

1. Zamestitel' predsedatelya promyshlennogo oblastnogo ispolnitel'nogo komiteta, Kemerovo (for Miroshnichenko.). 2. Predsedatel' shakhtennogo komiteta, poselok shakhty "Yagunovskaya" (for Marov). 3. Glavnyy inzh. Kemerovskogo bytkombinata No.1 (for Trilobov).
(Kuznetsk basin—Service industries)

L 10192-63 EPR/EFP(c)/EFP(n)-2/EWT(m)/DDG--APFTC/ASD/APWL/
 SSB--Pa-1/Pr-1/Pu-1--AR/WJ/JD/JG S/0056/63/044/005/1445/1449
 ACCESSION NR: AP3000032

AUTHOR: Marov, G. I.; Nemilov, Yu. A.; Salitskiy, Yu. A.; Eysmont, V. P.

TITLE: Fission of uranium and thorium induced by sub-barrier deuterons

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1445-1449

TOPIC TAGS: Uranium and thorium fission, sub-barrier neutrons, stripping, fragment distribution

ABSTRACT: The absolute fission cross sections of U-233, U-235, U-238, and Th-232 induced by 5.8--6.6 MeV deuterons were measured with a semiconductor detector, and the mechanism of the sub-barrier interaction resulting in the fission of the given nuclei was ascertained. n-type silicon having a resistivity on the order of 150 ohm-cm was used as the detector material. Angular anisotropy of the fragment distribution was disregarded. Simultaneously with registration of the fission events, pulses were fed to a 128-channel pulse-height analyzer for the determination of the fragment energy spectra. The fissions induced by the background neutrons did not exceed 20%. For 6.6 MeV deuterons, the cross

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ACCESSION NR: AP3000032

sections were found to be 0.15, 0.16, 0.75, and 1.2 millibarns for Th-232, U-238, U-235, and U-233, respectively, with 10% accuracy. The investigation of the fragment kinetic-energy distributions and the analysis of the fission cross sections indicate that Th-232 and U-238 undergo fission mainly following deuteron capture, but that at least 70% of the U-235 and U-233 fission events are preceded by stripping. The authors are indebted to S. A. Karamyan for assistance." Original article has: 2 figures, 4 formulas, and 1 table.

ASSOCIATION: none

SUBMITTED: 12Nov63

DATE ACQ: 12Jun63

ENCL: 00

SUB CODE: PH

NR REF SOV: 001

OTHER: 007

101/CO
Card 2/2

BOYEV, A.F., inzhener; MARKIN, S.G., inzhener; MAROV, I.F., inzhener;
SHTEFAN, V.Ye., inzhener.

Increasing the efficiency of the boiler unit burning pulverized
lean coal. Energetik 4 no.2:10-12 P '56. (MLRA 9:5)
(Boilers)

104-3-4/45

Marov, I.F.
AUTHOR: Duel' M.A. and Marov, I.F., Engineers.

TITLE: Experience in the automation of steam superheat control in boilers with surface steam-coolers. (Opyt avtomatizatsii regulirovaniya peregreba para na kotlakh s poverkhnostnymi parookhladitelyami)

PERIODICAL: "Elektricheskiye Stantsii" (Power Stations), 1957, Vol.28, No. 3, pp. 12 - 15 (U.S.S.R.)

ABSTRACT: Until recently the problem of providing automatic steam superheat temperature control in drum type boilers with surface type steam coolers (de-superheaters) has not been solved satisfactorily because of the unfavourable dynamic properties of the superheat temperature. However a number of power stations have experience of operating automatic superheat temperatures on boilers of this type.

Adjustments were made to superheat temperature regulators on boilers with surface steam coolers located both at the junction between superheaters (MAN boilers) and on the saturated steam side (boilers type Tn-150).

The German MAN boiler has a single drum with a rated output of 105 t/h, drum pressure of 86 atm. superheat temperature of 500 C burning anthracite duff. The single drum vertical-water tube boiler type Tn-150 has an output of 150 t/h a

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104-3-4/45

Experience in the automation of steam superheat control in boilers with surface steam-coolers. (Cont.)

drum pressure of 35 atm. superheated steam temperature of 420 C, and burns coal dust brand T. Both types of boilers are fitted with automatic controllers for feed water, combustion and fuel pulverisation. With the single impulse regulators with variable load and water supply the temperature variations in the MAN boilers are $\pm 10 - 12$ C, in favourable conditions and $\pm 18 - 20$ C in unfavourable conditions and therefore additional control elements were introduced. The circuit by which control of superheat temperature was arranged is illustrated in Fig. 1. In adjusting the regulators additional controlling impulses were arranged according to the rate of change of temperature in the gas duct beyond the superheater but this caused deterioration in control and it was not used.

The boiler type T η -150 has worse dynamic properties than the MAN boiler mainly because the steam cooler is on the saturated steam side. With hand control the steam superheat temperature variations reached $\pm 10 - 12$ C even at constant load and it was calculated that with unfavourable conditions superheat steam temperature variations could reach $\pm 22 - 25$ C. The use of auto-control of the combustion process by means of

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104-3-4/45

Experience in the automation of steam superheat control in boilers with surface steam-coolers. (Cont.)

the "heat-air" circuit removed the sharp pressure variations in the steam pipe and made the furnace conditions more stable and in view of the good operation of the feed regulators the conditions were favourable for normal operation of steam superheat temperature regulators. The circuit that was used is illustrated in a diagram. The regulator maintains the superheat temperature within the limits of $\pm 2 - 3$ C, or up to ± 4 C when the load varies by $\pm 12 - 15$ t/h.

Operating experience with the electronic superheat temperature regulators showed that the dynamic characteristics of the control sections changed with time because of slag deposition in the furnace, contamination of the heating surfaces and so on. Therefore, in operation it is periodically necessary to check the dynamic characteristics of the control sections and to adjust the regulators if necessary.

It is concluded that in selecting a scheme for automatic control of the temperature of superheated steam it is necessary to proceed from the dynamic characteristics of the controlled section. Calculation of the best adjustment conditions and evaluation of the quality of automatic steam superheat temperature control can be obtained with sufficient accuracy for

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104-3-4/45

Experience in the automation of steam superheat control in boilers with surface steam-coolers. (Cont.)

practical purposes from experimental characteristics of acceleration or frequency characteristics. To extend the range of control of temperature and to compensate for the influence of feed control it is advisable to introduce into the circuit of the superheat temperature regulator an additional control impulse from the feed regulator. Good operation of the automatic feed regulator and the combustion process regulators facilitate the operation of the superheat temperature regulators. In this case even on boilers with surface steam coolers located on the saturated steam side it is possible to achieve satisfactory control of superheat.

There are 5 figures.

AVAILABLE: Library of Congress

Card 4/4

MAROV
BOYEV, A.F., inzhener; DUEL', M.A., inzhener; MAROV, I.F., inzhener; SERIK,
D.A., inzhener.

Automatisation of heat processes in electric power stations converted
to burning natural gas. Elek. sta. 28 no. 6:74-77 Je '57.
(Boilers) (MLRA 10:8)

GEORGIYEV, A.G., inzh.; MAROV, I.F., inzh.; PETATSKIY, V.I., inzh.;
EDEL'SHTEYN, S.A., inzh.

Automatic regulator for continuous blowdown and recording salinometer
for feed-water. Elek.sta. 28 no.12:13-14 D '57. (MIRA 12:3)
(Boilers) (Feed water)

MAROV, I. F.

AUTHORS: Boyev, A.F. and Marov, I.F., Engineers 96-58-2-4/13

TITLE: A Comparison of the Operation on Gas of Combined Pulverized Fuel and Gas Burners With Peripheral and With Central Gas Delivery
(Sravneniye raboty na gaze kombinirovannykh pylegazovykh gorelok s periferiynoy i tsentral'noy podachey gaza)

PERIODICAL: Teploenergetika, 1958, No 2, pp 23 - 27 (USSR)

ABSTRACT: In 1956, power stations of the Khar'kov system commenced to burn excess natural gas from the Shebelinsk field. Combustion was made as efficient as possible without undertaking costly alterations. The burners were partly modified and separate gas and pulverized fuel burners were installed in only a few cases. The main types of modified fuel/gas burners in the power stations of the system were ORGRES burners (60%) and the Babcock-Taganrog Boiler Works type (40%), these having respectively peripheral and central gas delivery. Burners with peripheral delivery resulting from reconstruction of pulverized fuel ORGRES burners are illustrated in Fig.1 and described; their principles of operation are stated. Gas passes out of the gas chamber in thin jets at a speed of about 170 m/sec in a radial direction. This direction and the high speed of the gas ensure good mixing between the gas and air within the burner embrasure, so that combustion is stable and non-luminous. Tests

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96-58-2-4/27

A Comparison of the Operation on Gas of Combined Pulverized Fuel and Gas Burners With Peripheral and With Central Gas Delivery

to determine the efficiency of burners with peripheral gas delivery were made with three burners on the front wall of a high-pressure boiler. In all the tests, a complete analysis was made of the outlet gases.

The test results are given in Table 1. When the boiler is steaming at about 67 t/h, with optimum value of excess air in the furnace, the gross efficiency of the boiler calculated from the reverse balance is 91.7% and from the direct balance 92.2%. When the rate is 83.6 t/h, the efficiencies are 90.7% and 91%, respectively, and at 97 t/h they are 91.1% and 90.82%, respectively. The relationship between the heat lost with the outgoing gases and the load on the boiler with the optimum amount of excess air is given in Fig.2. The loss of heat due to chemically incomplete combustion with change in the excess-air factor is shown in Fig.3. It is shown in Fig.4 that the best condition of operation of the boiler when burning natural gas in burners with peripheral gas delivery is obtained with an excess-air factor of 1.1 - 1.15. Combined pulverized fuel and gas burners with central gas delivery, illustrated in Fig.5, were those made by modifying the Babcock-Taganrog Boiler Works type of fuel burners. The burners are described and their dimensions are given. Since air

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96-58-2-4/23

A Comparison of the Operation on Gas of Combined Pulverized Fuel and Gas Burners
With Peripheral and With Central Gas Delivery

is delivered only through the secondary air duct, the jets of gas have to pass through a dead zone opposite the inoperative annular primary air duct before reaching the air flow. Therefore, the gas has no kinetic energy when it reaches the air; thus, conditions are less favourable to the mixing of gas and air in burners of this type. As it is uneconomic to deliver air to the primary duct by means of an exhauster, some secondary air was by-passed to the primary duct to improve combustion. In one of the boilers anthracite dust was delivered by hot air. On conversion to gas, this boiler was equipped with solid fuel/gas burners with central gas delivery. Although air was delivered simultaneously through the primary and secondary ducts, combustion remained unsatisfactory and the boiler efficiency was about 90%. After the installation of burners with peripheral gas delivery, combustion improved and the boiler efficiency was 2% higher.

Tests using burners with central gas delivery were made on a medium-pressure boiler type TГ-150. Burners for a gas output

of 2 500 m³/hour were installed on the side walls of the furnace, three on each side. The flame was luminous at all

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96-58-2-4/23

A Comparison of the Operation on Gas of Combined Pulverized Fuel and Gas Burners
With Peripheral and With Central Gas Delivery

loads and at heavy loads it reached the top of the furnace space and smoked appreciably. When burners with peripheral gas delivery are used, the flue-gas temperature is 20-25 °C lower than when burning solid fuel. When burners with central gas delivery are used, this temperature reduction is only 5 - 10 °C. Data of tests on boiler type T7-150 are given in Table 2. The relationship between the loss to the flue gases as a function of the boiler load is plotted in Fig.6. The relationship between the heat loss due to chemically incomplete combustion and the excess-air factor is exhibited in Fig.7. Curves of boiler efficiency against excess air factor and steam load are given in Fig.8. The most important characteristic of the boilers is the loss due to chemically incomplete combustion, since the loss associated with the flue gases largely depends on the design of the tail heating surfaces of the boiler. With optimum excess air, the heat loss due to chemically incomplete combustion is 1.4-1.6% less if burners with peripheral gas delivery are used instead of those with central gas delivery. There are 8 figures, 2 tables.

Card4/4

ASSOCIATION: Power Directorate of the Khar'kov Council of National Economy
(Energoupravleniye Khar'kovskogo Sovnarkhoza)

1. Gases-Combustion 2. Fuels-Performance

BOYEV, A.F.; GEORGIYEV, A.G.; MAROV, I.F.

Gas valves for the automatic regulation of gas expended in boilers.
Gas.prom. 5 no.11:24-26 N '60. (MIRA 13:11)
(Gas distribution) (Valves)

MAROV, I. N., YERMAKOV, A. M., and BELYAYEVA, V. K.

"Possibilities of using anionites for the calculation of the constants
of the stability of charged ions."

report presented at The Use of Radioactive Isotopes in Analytical
Chemistry, Conference in Moscow, 2-4 Dec 1957
Vestnik Ak Nauk SSSR, 1958, No. 2, (author Rodin, S. S.)

MAROV, I.N.

5(5); 21(5) FRANK I BOOK EXPLANATION 500/1900
 Akademika mek 222. Kuchel'ny po analitichesky khimi
 Primeniye radioaktivnykh izotopov v analitichesky khimi
 (Use of radioactive isotopes in analytical chemistry) Moscow
 1959. 199 p. (Series: Iz. Trudy, t. 9 (12))
 Soviet Union. 3,000 copies printed.

Marov, I.N. Alimaria, Corresponding Member, USSR Academy
 of Sciences; Ed. of Publishing House; A.N. Yermakov; Tech.
 M.; T.V. Polyakova.

FRONTIS: The book is intended for chemists and chemical
 engineers concerned with work in analytical chemistry.

CONTENTS: The book is a collection of the principal papers
 presented in Moscow at the Second Conference on the Use of
 Radioactive Isotopes. The problems discussed at the
 conference included separation, testing, and solubility
 or precipitation, determination of the instability constants

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of complex compounds, separation of rare earth metals, and
 ion-exchange chromatography. No personalities are mentioned.
 There are 151 references, 175 of which are Soviet, 33 German,
 19 French, 6 Swedish, 2 Hungarian, and 2 Czech.

TABLES OF CONTENTS:

Use of Radioactive Isotopes (Cont.)	500/1900
El'yash, Ye. I., B.P. Kibichik, and A.M. Trofimov. Study of the Adsorption of Ruthenium on Ion-exchanging Resins from Aqueous Solutions	148
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5(4)

SOV/78-4-2-39/40

AUTHORS:

Yermakov, A. N., Belyayeva, V. K., Marov, I. N., Chmutova, M. K.

TITLE:

On the Use of Ion Exchange for Investigating the Composition of the Complex Oxalates of Pu(IV), Zr, and Hf (O primenenií ionnogo obmena k izucheniyu sostava kompleksnykh oksalato Pu(IV), Zr i Hf)

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 2, pp 493-496 (USSR)

ABSTRACT:

The complex compounds of plutonium, zirconium, and hafnium were investigated by means of the ion-exchange method by oxalic acid. The following formulas of the complexes were found: $[Pu(C_2O_4)_5]^{6-}$, $[Zr(C_2O_4)_5]^{6-}$, and $[Hf(C_2O_4)_5]^{6-}$. These complexes are formed if oxalate ions in the solution are in excess at pH 5.8-6.2. The distribution coefficients and the exchange constants of the three elements in these compounds are almost equal. The coordination number of the metal in oxalate complexes of plutonium (IV), zirconium, and hafnium is probably 6. There are 1 figure, 3 tables, and 13 references, 10 of which are Soviet.

~~Classified~~

5(2)

SOV/78-4-8-18/43

AUTHORS: Ryabchikov, D. I., Yermakov, A. N., Belyayeva, V. K., Marov, I. N.

TITLE: An Investigation of the Complex Formations of Zirconium and Hafnium With Tartaric Acid by Means of the Ion Exchange Method
(Izucheniye kompleksobrazovaniya tsirkoniya i gafniya s vinnoy kislotoy metodom ionnogo obmena)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 8, pp 1814-1826
(USSR)

ABSTRACT: The investigation of the complex formations in aqueous solutions of zirconium and hafnium is rendered difficult by a strong tendency of these elements towards hydrolysis and polymerization. Therefore, the usual physico-chemical methods cannot be applied. For this reason the ion exchange method, the investigation of the equilibrium distribution of an element between two phases of a heterogeneous system are suggested. This relatively new method is described in detail on the basis of publication data. The authors used $Zr^{95} + Nb^{95}$ for their own experiments. In this case the softer β -radiation of Nb^{95} was absorbed by an aluminum filter, moreover Hf^{181} and the cation exchanger KU-2.

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An Investigation of the Complex Formations of Zirconium SOV/78-4-8-18/43
and Hafnium With Tartaric Acid by Means of the Ion Exchange Method

The solution was buffered with NaClO_4 . By means of experiments it was found that in the case of a concentration of 2 - 1.3 mol hydrogen ions per liter no hydrolysis or polymerization takes place. The following is assumed to be the probable reaction of the complex formation of Zr and Hf with tartaric acid: $\text{Me}^{4+} + \text{H}_2\text{tart} \rightleftharpoons \text{MeH}_{2-n}\text{tart}^{4-n} + n\text{H}^+$. The distribution coefficient was computed and its dependence on the ratio $\frac{v}{m}$ (Table 3 v = volume of the solution, m = weighed portion of the cation exchanger) was determined. Moreover, the number of hydrogen ions released from tartaric acid in the complex formation was determined (Fig 5). The complex compounds of hafnium are more stable than those of zirconium (Tables 3, 4). A sorption of ions of the type MeHtart^{3+} or Metart^{2+} was not observed. Probably they do not take place due to steric factors or the weakening of the ionic charge in consequence of the linkage with the oxy groups of tartaric acid. There are 5 figures, 4 tables, and 38 references, 10 of which are Soviet.

SUBMITTED:
Card 2/2

April 16, 1959

24(7) SOV/48-23-7-15/31
 AUTHORS: Kocharov, G. Ye., Komar, A. P., Korolev, G. A., Marov, I. N.,
 Surkov, Yu. A.

TITLE: The Fine Structure of the α -Spectrum of Th²²⁹
 (Tonkaya struktura α -spektra Th²²⁹)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
 Vol 23, Nr 7, pp 855-858 (USSR)

ABSTRACT: The radioactive isotope Th²²⁹ is obtained by the α -decay of
 U²³³; as the half-life of the latter is $1.62 \cdot 10^5$, that of Th²²⁹,
 however, only 7,000 years, a large quantity of U²³³ is necessary
 for the exact determination of the activity of the isotope
 Th²²⁹. A paper (Ref 1) is mentioned in which the α -decay of
 this isotope was investigated, but it did not deliver satis-
 factory results due to a poor resolving power. The present
 investigation was carried out with an ionization- α -spectrometer
 of high resolving power, and the chemical production of the
 isotope from oxides of the isotope U²³³ is described in detail.

Card 1/2 The isotope U²³³ investigated by the authors contains -

The Fine Structure of the α -Spectrum of Th²²⁹

SOV/48-23-7-15/31

besides the isotope Th²²⁹ - also Th²²⁸; the energies of the unknown α -lines were determined from the well-known α -lines of Th²²⁸ and its daughter nuclei. The energy of the principal group of the α -particles was determined by several measurements at 5040 kev, the determination of the energy of the other α -groups was carried out by electric collimation. A table contains the energies determined by the authors and the relative intensities of the lines of the isotope Th²²⁹, and figure 5 shows a scheme of its decay. The authors thank Ye. A. Damaskinskiy of the LPI imeni Kalinin for his help in this work. There are 5 figures, 1 table, and 8 references, 6 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Physico-technical Institute of the Academy of Sciences, USSR)

Card 2/2

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S/078/60/005/05/11/037
B004/B016

AUTHORS: Ryabchikov, D. I., Yermakov, A. M., Belyayeva, V. K., Marov, I. N.
TITLE: Complex Formation¹ of Zirconium¹ and Hafnium² With Some Hydroxy Acids
PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 5, pp. 1051-1067

TEXT: The authors intended to investigate the stability of the complex compounds of Zr and Hf with various organic acids, and, in the case of differences in their stability, the development of a method of separating these two elements. G. A. Yevtikova took part in this investigation. The authors describe the reagents applied (tartaric acid, citric acid, malic acid, trihydroxy-glutaric acid, HClO_4 , $\text{ZrOCl}_2 \cdot 8\text{H}_2\text{O}$, $\text{HfOCl}_2 \cdot 8\text{H}_2\text{O}$, cation exchangers of the KU-2 type, anion exchangers of the EDE-10p type). Zr^{95} and Hf^{181} were used as tracers. Preliminary experiments indicated that dicarboxylic acids (glutaric, glutamic, succinic, malonic, maleic, and fumaric acid) do not form complexes with Zr or Hf, whereas the afore-mentioned hydroxy acids (and the mesoxalic acid) change the distribution of Zr and Hf even in strongly acid media by the formation of stable complexes. Tables 1-5 give the experimental data for the five hydroxy acids in the presence of 0.125, 0.5, 1, and 2 M HClO_4 , and the partition coefficients K_d as well as the separation factor $\alpha = K_{d\text{Hf}} / K_{d\text{Zr}}$.

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Complex Formation of Zirconium and Hafnium With Some Hydroxy AcidsS/078/60/005/05/11/037
B004/B016

Figs. 1-5 show the change of K_d in dependence on the concentration of the organic acid. K_{dZr} is always smaller than K_{dHf} . For citric acid, $\alpha = 4$. The separation of Zr and Hf by means of KU-2 cation exchangers by elution with 1M $HClO_4$ and 0.0256 M citric acid is based thereupon, as suggested and described by the authors. Fig. 6 shows the yield curves of the chromatographically separated complexes of Zr and Hf, which were identified by measuring their peaks by means of a γ -spectrometer (Fig. 7). This was carried out by G. A. Chernov. Figs. 8-11 show the dependence of $1/K_d$ on the concentration of the complexing substance. The authors determined the number of coordinate groups for the Zr and Hf complexes with the organic acids (Figs. 12-15). Table 6 presents the data for the adsorption of Hf onto the EDE-10p anion exchanger. The formation coefficients of the complexes are given in Table 7. The authors discuss the structure of the complex compounds. As may be seen from Table 8, dicarboxylic acids (succinic acid) do not form complex compounds, hydroxy-dicarboxylic acids, however, do. This is indicative of the participation of both carboxyl and hydroxyl groups in the complex formation. The stability of the complex compounds of Zr and Hf decreases in the following order: Oxalic acid > mesoxalic acid > trihydroxy-glutaric acid > citric acid > lactic acid > tartaric acid > malic acid. There are 15 figures, 8 tables, and 3 Soviet references. ✓

SUBMITTED: July 30, 1959
Card 2/2

S/078/60/005/012/016/016
B017/B064

AUTHORS: Marov, I. N., Belyayeva, V. K., Yermakov, A. N., and
Ryabchikov, D. I. ✓ ✓

TITLE: Chromatographic Separation of Zirconium and Hafnium

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 12,
pp. 2844-2847

TEXT: A new method of separating zirconium and hafnium by means of the KY-2 (KU-2) cationite was developed. A solution of 0.025 mole citric acid and 1 mole perchloric acid, or 1 mole nitric acid, was used as desorbent. The rate of desorption is 0.5 - 0.6 ml/min·cm². Zirconium and hafnium were radiometrically analyzed in the extracts with the isotopes Zr⁹⁵ and Hf¹⁸¹. Fig. 1 shows the curves for the chromatographic distribution of Zr⁹⁵ (+Nb⁹⁵) and Hf. It was found that with an increased loading of the cationite the value V_{\max} rises, and the ratio $V_{\max}^{\text{Hf}}/V_{\max}^{\text{Zr}}$ decreases. This effect is explained by the formation of polynuclear zirconium complexes, and the effect of the large zirconium Card 1/2 ✓

Chromatographic Separation of Zirconium
and Hafnium

S/078/60/005/012/016/016
B017/B064

quantity upon the chemical behavior of hafnium. Fig. 2 shows the desorption curve of the chromatographic separation of Nb^{95} from zirconium and hafnium. The effect of mineral acids as desorbents upon the intensity of zirconium separation from hafnium was investigated, and it was found that when H_2SO_4 is used as desorbent separation is easier than when HNO_3 is used. The stability of zirconium and hafnium complexes with mineral acids decreases in the order: $H_2SO_4 \gg HCl > HNO_3$. G. A. Yevtikova assisted in the work. There are 2 figures and 3 references: 2 Soviet and 1 US. ✓

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I.
Vernadskogo Akademii nauk SSSR
(Institute of Geochemistry and Analytical Chemistry imeni
V. I. Vernadskiy of the Academy of Sciences USSR)

SUBMITTED: May 26, 1960

Card 2/2

MAROV, I. N., CAND CHEM SCI, "^{Study}INVESTIGATION OF THE
PROCESS OF ^{the}COMPLEX FORMING^{ation} OF ZIRCONIUM AND HAFNIUM."
MOSCOW, 1961. (MOSCOW STATE UNIV IMENI M. V. LOMONOSOV.
CHEMICAL FACULTY). (KL-DV, 11-61, 211).

-42-

S/078/61/006/005/003/015
B121/B208

AUTHORS: Zolotov, Yu. A., Marov, I. N., and Moskvina, A. I.
TITLE: Complex compounds of pentavalent neptunium in solutions of oxalic acid and ethylene diamine tetraacetic acid

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 5, 1961, 1055 - 1062

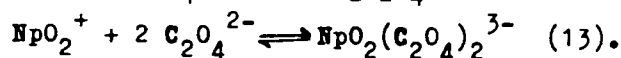
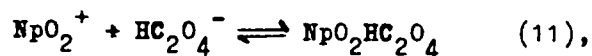
TEXT: The authors studied the complex formation of the NpO_2^+ ion with oxalic acid and ethylene diamine tetraacetic acid by ion exchange. The study was carried out statically by observing the distribution of Np^{V} used as indicator between a 0.05 M solution of NH_4ClO_4 and the KY-2 (KU-2) cation exchanger in its ammonium form in the presence and in the absence of complexing agents. The experiments were performed at $20 \pm 2^\circ\text{C}$. The grain size of the cation exchanger was 50 - 70 mesh. The pH of the solution was measured with a glass electrode and the ЛП-5 (LP-5) pH-meter. In a pH-range of 2 - 5 Np^{V} was found to form complex ions of the following

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Complex compounds of ...

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composition with oxalic acid $\text{NpO}_2\text{HC}_2\text{O}_4$, $\text{NpO}_2\text{C}_2\text{O}_4^-$ and $\text{NpO}_2(\text{C}_2\text{O}_4)_2^{3-}$. The corresponding stability constants were: $5.0 \cdot 10^2$, $1.1 \cdot 10^4$, and $2.3 \cdot 10^7$. At a pH below 1,6 no neptunium oxalate complexes were obtained. In the pH-range 2,0 - 3,2 $\text{NpO}_2\text{HC}_2\text{O}_4$ and $\text{NpO}_2\text{C}_2\text{O}_4^-$ are formed, and at a pH above 4 $\text{NpO}_2(\text{C}_2\text{O}_4)_2^{3-}$. The complex formation is expressed by the following equations:



The thermodynamic stability constants of the NpO_2^+ oxalate complexes were compared with published data (Ref. 5: D. M. Gruen, J. J. Katz, J. Amer. Chem. Soc., 75, 3772 (1953)); the results are summarized in Table 3. In the pH-range 4.9 - 6.2 neptunium forms with ethylene diamine tetraacetic acid only one complex of the composition $\text{NpO}_2\text{Y}^{3-}$ and a stability constant

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Complex compounds of ...

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B121/B208

$(4.9 \pm 1.1) \cdot 10^9$. There are 1 figure, 4 tables, and 21 references: 12 Soviet-bloc and 9 non-Soviet-bloc. The four most recent references to English language publications read as follows: 4. G. Gibson, D. M. Gruen, J. J. Katz, J. Amer. Chem. Soc., 74, 2103 (1952); 8. J. C. Hindman, L. B. Magnusson, T. J. La Chapelle, The Transuranium Elements. Nat. Nucl. En. Sev., Div. IV, 14B, paper 15.2, New York 1949; 9. R. Sjoblom, J. C. Hindman, J. Amer. Chem. Soc., 73, 1744 (1951); 10. R. M. Diamond, K. Street, G. T. Seaborg, J. Amer. Chem. Soc., 76, 146 (1954).

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR
(Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences USSR)

SUBMITTED: April 8, 1960

Card 3/4
2

25536

S/078/61/006/008/005/018
B121/B2035.3700

AUTHORS: Moskvin, A. I., Marov, I. N., and Zolotov, Yu. A.

TITLE: Complex compounds of pentavalent neptunium with citric and tartaric acid

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 8, 1961, 1813-1820

TEXT: The complex compounds of neptunium with oxy-acids have been little studied. Only Yu. A. Zolotov and Yu. P. Novikov (Ref. 1: Zh. neorgan. khimii 6, 1055, 1961) detected a change in the absorption spectra of neptunium solutions in the presence of complex-forming substances. The complex formation at different pH values was studied by cation exchange between pentavalent neptunium in 0.05 molar NH_4ClO_4 solution and the cation exchanger KU-2 (KU-2) in ammonium form in the presence of citric and tartaric acid. The pH value was measured with an $\text{M}-5$ (LP-5) pH meter with glass electrodes. In the pH range 4.3 - 5.2, neptunium (V) was found to form the following complexes with citric acid: $\text{NpO}_2\text{Cit}^{2-}$ and $\text{NpO}_2\text{HCit}^-$ with the stability constants $(4.7 \pm 1.0) \cdot 10^3$ ($\text{pK} = 3.67$) and

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Complex compounds of...

25506

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B121/B203

(4.9 ± 1.4) $\cdot 10^2$ (pK = 2.69). The absorption spectra of neptunium (V) solutions in the presence of citric acid at pH = 0.9, 3.5, 5.1, 5.7, and 6.1 were recorded. The absorption maximum at 983 m μ was found to shift due to complex formation to the side of increased complex formation. The complex formation in the system neptunium (V) - tartaric acid was determined by a change in absorption spectra of neptunium (V) solutions in the presence of tartaric acid at different pH values of the solutions. In the pH range 3.2 - 6.2, neptunium - tartaric acid complexes of the following compositions were determined by cation exchange: NpO_2HTar , NpO_2Tar^- , $\text{NpO}_2\text{Tar}_2^{3-}$, and $\text{NpO}_2\text{Tar}_3^{5-}$. These complexes have the following stability constants: $2.3 \cdot 10^2$ (pK = 2.36), $2.1 \cdot 10^2$ (pK = 2.32), $2.0 \cdot 10^4$ (pK = 4.30), and $1.5 \cdot 10^6$ (pK = 6.18). There are 7 figures, 3 tables, and 4 Soviet-bloc references.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im.
V. I. Vernadskogo AN SSSR (Institute of Geochemistry and
Analytical Chemistry imeni V. I. Vernadskiy AS USSR)

SUBMITTED: July 8, 1960

Card 2/2

MAROV, I.N.; CHMUTOVA, M.K.

Complex formation of Pu^{IV} with a sulfate ion by cation exchange.
Zhur.neorg.khim. 6 no.12:2654-2662 D '61. (MIRA 14:12)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo
AN SSSR.

(Plutonium compounds) (Ion exchange)

MAROV, I.N.

"Qualitative Analytische Chemie" by A. Okač. Reviewed by I. N. Marov.
Zhur.anal.khim. 16 no.3:378-379 My-Je '61. (MIRA 14:6)
(Chemistry, Analytical—Qualitative)
(Okač, A.)

S/078/62/007/001/001/005
B119/B110

AUTHORS: Ryabchikov, D. I., Yermakov, A. N., Belyayeva, V. K., Marov, I. N., Yao K'o-min

TITLE: Application of ion exchange for studying the complex formation of zirconium and hafnium with sulfate ion

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 1, 1962, 69-75

TEXT: The experimental part of the present paper was carried out by the method described in Refs. 8 and 9 (Ref. 8: D. I. Ryabchikov, A. N. Yermakov, V. K. Belyayeva, I. N. Marov, Zh. neorgan. khimii, 4, 1814 (1959); Ref. 9: The same authors, Zh. neorgan. khimii, 5, 1051 (1960)). Anion exchanger 3AD-107 (EDE-10P) and cation exchanger KJ-2 (KU-2) were used. The complex formation of Zr and Hf with sulfuric acid was examined by cation exchange in chloric-acid solution with a hydrogen-ion concentration of $[H^+] = 2.33$ moles/l. At sulfuric-acid concentrations of up to 0.1 mole/l, three complexes form with Zr, which correspond to the ratios of metal : $H_2SO_4 = 1 : 1, 1 : 2$, and $1 : 3$. Hf forms two complexes

corresponding to metal : $H_2SO_4 = 1 : 1$ and $1 : 2$. The equilibrium

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S/078/62/007/001/001/005
B119/B110

Application of ion exchange ...

constants of the complexing reactions were calculated by methods of
Fronaeus and Schubert

$$\left[K_j = \frac{[M(SO_4)_j]^{4-2j} [H^+]^j}{[M^{4+}] [HSO_4^-]^j} \right] \quad \text{Values for Zr. } K_1 = 361 \pm 12.$$

$$K_2 = (2.17 \pm 0.15) \cdot 10^3, K_3 = (4.06 \pm 1.2) \cdot 10^5; \text{ for Hf. } K_1 = 130 \pm 5$$

$K_2 = (2.09 \pm 0.1) \cdot 10^3$ It has been found that the complex $M(SO_4)_j$ is absorbed by the cation exchanger KY-2 (KU-2) within the limits of error. Mention is made of papers by V. F. Saksin (Ref. 4: Nauchn dokl vysshego shkoly. Khimiya i khim tekhnologiya no. 1.75 (1959)). A. K. Kirakosyan, I. V. Tananayev (Ref. 5: Zh neorgan khimii, 4, 852 (1959)), Ye. I. Mayorova, V. V. Pomin (Ref. 11: Zh neorgan khimii, 3, 1937 (1958)). There are 6 figures, 4 tables, and 12 references: 5 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: E. L. Zebroski, H. W. Alter, F. K. Neumann, J. Amer. Chem. Soc., 76, 5646 (1954); R. A. Day, R. N. Wilhite, F. D. Hamilton, J.

Card 2/3

Application of ion exchange ...

S/078/62/007/001/001/005
B119/B110

Amer. Chem. Soc., 77, 3180 (1955); J. C. Sullivan, J. C. Hindman. J. Amer. Chem. Soc., 76, 593 (1954); B. A. I. Lister. J. Chem. Soc. (11), 3123 (1951).

SUBMITTED: January 3, 1961

Card 3/3

S/078/62/007/005/007/014
B101/B110

AUTHORS: Marov, I. N., Ryabchikov, D. I.

TITLE: Complex formation of zirconium (IV) and hafnium (IV) with chloride, nitrate, and oxalate ions

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 5, 1962, 1036-1048

TEXT: The sorption of Zr and Hf from acid solution was studied by cation exchange on a KU-2 (KU-2) resin, and the stability constants were calculated according to Fronaeus. Zr^{95} and Nb^{95} and Hf^{181} , which were used for tagging, were produced by a method published (Zh. neorgan. khimii, 4, 1840 (1959); 5, 1051 (1960)). The principal amount of Nb^{95} was removed by sorption on glass wadding in 10 N HNO_3 . Results: (I) In $HClO_4 + HCl$, at a total acid concentration $\mu = 2.0$ and 4.0 moles/liter, Zr and Hf form at $\mu = 2.0$ equally stable complexes $MeCl^{3+}$, $MeCl_2^{2+}$, $MeCl_3^+$, and $MeCl_4^0$, whose stability constants are $\beta_1 = 0.95 \pm 0.05$; $\beta_2 = 0.12 \pm 0.05$;

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Complex formation of zirconium ...

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B101/B110

$\beta_3 = 0.070 \pm 0.01$; $\beta_4 = 0.080 \pm 0.005$, respectively. The value for β_1 agrees well with the value found by R. E. Connick, W. H. McVey (see below). At $\mu = 4.0$, the complexes MeCl_3^+ , MeCl_2^+ , and MeCl_3^+ are formed. The stability constants are for the Zr complexes: $\beta_1 = 1.1 \pm 0.1$; $\beta_2 = 0.21 \pm 0.05$; $\beta_3 = 0.05 \pm 0.01$, and for the Hf complexes: $\beta_1 = 0.94 \pm 0.06$; $\beta_2 = 0.18 \pm 0.05$; $\beta_3 = 0.08 \pm 0.02$. (II) In $\text{HClO}_4 + \text{HNO}_3$, the complexes MeNO_3^+ and $\text{Me}(\text{NO}_3)_2^+$ are formed with the stability constants at $\mu = 2.0$ for Zr: $\beta_1 = 0.92 \pm 0.07$; $\beta_2 = 0.46 \pm 0.01$, for Hf: $\beta_1 = 0.90 \pm 0.07$, $\beta_2 = 0.55 \pm 0.08$; at $\mu = 4.0$ for Zr: $\beta_1 = 0.88 \pm 0.1$, $\beta_2 = 0.14 \pm 0.08$, for Hf: $\beta_1 = 0.60 \pm 0.05$; $\beta_2 = 0.12 \pm 0.04$. (III) In $\text{HClO}_4 + (\text{COOH})_2$, the complexes $\text{MeC}_2\text{O}_4^{2+}$ and $\text{Me}(\text{C}_2\text{O}_4)_2$ were formed in the concentration range of oxalic acid of $0.5 \cdot 10^{-5} - 1 \cdot 10^{-4}$ moles/liter at

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Complex formation of zirconium ...

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B101/B110

$\mu = 2.0$, but only $\text{MeC}_2\text{O}_4^{2+}$ at $\mu = 4.0$. The equilibrium constants
 $K_1 = \frac{[\text{MeC}_2\text{O}_4^{2+}][\text{H}^+]^2}{[\text{Me}^{4+}][\text{H}_2\text{C}_2\text{O}_4]}$ for Zr are $(2.96 \pm 0.3) \cdot 10^5$ and
 $(4.0 \pm 0.6) \cdot 10^5$ at $\mu = 2.0$ and 4.0 , respectively; for Hf, they are
 $(1.36 \pm 0.36) \cdot 10^5$ and $(1.4 \pm 0.3) \cdot 10^5$, respectively. For
 $K_2 = \frac{[\text{Me}(\text{C}_2\text{O}_4)_2]^{-}}{[\text{Me}^{4+}][\text{H}_2\text{C}_2\text{O}_4]^2}$ and $\mu = 2.0$, the following was
found: $(4.8 \pm 1.6) \cdot 10^9$ for Zr, and $(5.3 \pm 1.8) \cdot 10^9$ for Hf. There are 6
figures and 13 tables. The most important English-language references are:
R. E. Connick, W. H. McVey, J. Amer. Chem. Soc., 71, 3182 (1949);
A. E. Levitt, H. Freund, J. Amer. Chem. Soc., 78, 1545 (1956); McVey,
Hanford Work Report, 21, 487.

SUBMITTED: January 12, 1961

Card 3/3

RYABCHIKOV, D.I.; YAO KE-MIN' [Yao K'o-min]; MAROV, I.N.

Complex formation of indium with gallic acid. Zhur.neorg.khim.
7 no.11:2545-2548 N '62. (MIRA 15:12)

1. Institut geokhimii i analiticheskoy khimii imeni
V.I. Vernadskogo AN SSSR.
(Indium compounds)
(Gallic acid)

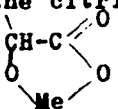
S/078/62/007/012/008/022
B144/B180

AUTHORS: Ryabchikov, D. I., Marov, I. N., Yao K'o-Min

TITLE: Complex indium citrates

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 12, 1962, 2716-2724

TEXT: Complexes of In and citric acid were studied by potentiometric and high-frequency titration and by ion-exchange separation. Synthesis: 1) from InCl_3 and Na_3Cit ; 2) from InCl_3 and ammonia. From the titration of 1:1, 1:2 and 1:5 mixtures of $\text{InCl}_3 + \text{H}_3\text{Cit}$ and $\text{InCl}_3 + \text{Na}_3\text{Cit}$, it was found that 1:1 complexes are formed. Na_3Cit addition reduced the pH of the InCl_3 solution. This is due to the splitting-off of one H ion and ring formation and shows that not only the carboxyl groups but also the hydroxy group of the citric acid take part in the reaction which yields a

chelate compound, . The complex $\text{Na}[\text{In}(\text{C}_6\text{H}_4\text{O}_7)(\text{H}_2\text{O})_2]$, synthesized

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Complex indium citrates

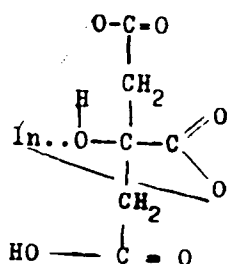
S/078/62/007/012/008/022
B144/B180

by 1) has a charge of -1. Its 10^{-2} mole solution has a pH of 3.5. The complex resultant from 2), $H[In(C_6H_4O_7)(H_2O)_2]$, is hardly soluble in H_2O . These results were confirmed by the ion-exchange method. The $In: Cit^{3-}$ ratio was 1:1 with a pH of ~ 7.1 . Sorption of In from citrate solution by KY-2 (KU-2) or 3AD-10 (EDE-10) anionite and desorption with $NaClO_4$ yielded the charge and its sign using the formula $d \log K_d / d \log [ClO_4^-] = m/n$, where m is the charge of the citrate complex and n the charge of the $[Cl_4^-]$ ion, being -1. The complex composition was determined from the indium distribution in solutions of $HClO_4$ (0.10, 0.15 or 0.20 mole) + $NaClO_4$ ($\mu = 0.5$ mole) in the presence of 0.03 - 0.20 mole citric acid. Found graphically from the ratio $\log K_f / d \log H^+$ the number of H ions was 2. Hence, the reaction is: $In^{3+} + H_3Cit \rightleftharpoons InHCit^+ + 2H^+$. The equilibrium constant is 0.09 ± 0.006 . The configuration

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Complex indium citrates

S/078/62/007/012/008/022
B144/B180



is suggested for the complex formed in highly acid medium. There are 9 figures and 4 tables.

SUBMITTED: March 14, 1962

Card 3/3

S/078/63/008/003/007/020
B117/B186

AUTHORS: Ryabchikov, D. I., Marov, I. N., Yao K'o-min

TITLE: Study of complex formation between indium and certain complexons by the ion exchange method

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 8, no. 3, 1963, 641-650

TEXT: The ion exchange method was used to study the formation, equilibrium and stability of complexes between In^{3+} and the following: diethylene triamine pentaacetic acid (I), ethylene diamine tetraacetic acid (II), diamino cyclohexane tetraacetic acid (III), hexamethylene diamine tetraacetic acid (IV), oxyethylene diamine triacetic acid (V), nitrile triacetic acid (VI), oxyethyl imino diacetic acid (VII), N,N'-bis-(o-hydroxyphenyl)ethylene diamine - N,N'-diacetic acid (VIII), and ethylene diamine - N,N'-bis-(o-oxyphenyl)-N-acetic acid (IX). The hydrogen ion concentration was 0.1 - 0.4 moles/liter at $\mu = 0.5$. 1:1 indium complexes were formed at the hydrogen ion and complexon concentrations investigated. To calculate the equilibrium constants, the number of complexon hydrogen

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Study of complex formation between ...

S/078/63/008/003/007/020
B117/B186

ions separable during complex formation was determined. Five H^+ ions were separated from the molecule of (I), four each from (II) and (III), three each from (V) and (VI), and two from (VII). The equilibrium constants decrease in the order $II > III > V > VI > I > VII > IV$, and are therefore related to the number of CH_3COO^- groups bound to the In^{3+} . The equilibrium constants and the dissociation constants calculated from the Davis equation were used to determine the stability constants of the indium complexes. The stability of these complexes decreases in the order $I > III > II > V > VI > VII$, which suggests a correlation of this order with the number of five-membered rings formed during complex formation. The data are in figure and 7 tables.

URM111 : September 7, 1962

Card 2/

L 13505-63 EWP(n)/EWI(m)/HDS AFFTC/ASD JD/JG

ACCESSION NR: AP3003474

S/0078/63/008/007/1623/1633

AUTHOR: Yermakov, A. N.; Marov, I. N.; Belyayeva, V. K.

TITLE: Properties of aqueous solutions of zirconium oxychloride^m63
56

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 7, 1963, 1623-1633

TOPIC TAGS: zirconium, zirconium oxychloride, potentiometry, cryoscopy

ABSTRACT: The authors studied the condition of zirconium in aqueous solutions of $ZrOCl_2 \cdot 2H_2O$ by potentiometric, cryoscopic, and electric conductivity methods, and by measuring the diffusion rate. Purpose of study was to obtain information concerning hydrolysis and degree of polymerization of this compound. $ZrOCl_2 \cdot 2H_2O$, thrice recrystallized from a commercial chloride solution, was used for the study. The composition of the compound corresponded precisely to the formula. The solutions to be tested were prepared by dissolving a weighed portion of the salt in distilled water which was chilled to $3-4^\circ$. The solutions were kept at this temperature for 24 hours. In all cases, each experiment was repeated no less than two times. Authors determined the activity of hydrochloric acid in zirconium oxychloride solutions at 0.2, 10, and 25% in concentration ranges of 0.005-0.38 mol/l. The drops in the freezing points of the zirconium oxychloride solutions were measured in relation to salt concentration

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1. 1355-63

ACCESSION NR: AF3003474

and aging conditions of the solution. The diffusion coefficients of the salts of $ZrOCl$ sub 2.8H sub 2 O, $HfOCl$ sub 2.8H sub 2 O, and $ThCl$ sub 4 were determined. The electrical conductivity of zirconium oxychloride solutions was measured at 0.2, 10 and 25° in concentration range of 0.0617-0.3868 mol/l. Obtained results show that products of slight molecular weight exist in zirconium oxychloride solutions. "The authors express their gratitude to D. I. Ryabchikov, V. O. Shipikter, D. I. Leykis, O. L. Kabanova, V. V. Fomin and Yu. M. Kesler for valuable suggestions and help in the work." Orig. art. has: 5 figures and 6 tables. 7

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. B. I. Vernadskogo, Akademi nauk, SSSR (Institute of Geochemistry and Analytical Chemistry, Academy of Sciences, SSSR)

SUBMITTED: 14Sep62

DATE ACQ: 02Aug63

ENCL: 00

SUB CODE: CH

NO REF SOV: 009

OTHER: 020

Card 2/2

ACCESSION NR: AP4034717

S/0007/64/000/005/0395/0398

AUTHORS: Vinogradov, A. P.; Vdovykin, G. P.; Marov, I. N.

TITLE: Free radicals in the Mighei meteorite

SOURCE: Geokhimiya, no. 5, 1964, 395-398

TOPIC TAGS: electron paramagnetic resonance, meteorite, chondrite, organic radical

ABSTRACT: The Mighei chondrite fell in the vicinity of Odessa in 1889. It has been previously analyzed chemically, and carbonaceous matter has been determined. The present authors have made electron paramagnetic resonance studies on the meteorite to determine the structure of this carbonaceous material, and they have found free organic radicals to be present. The spectrum showed hyperfine structure corresponding to a complex type of free organic radical. EPR studies were made on other substances, such as ozokerite, gilsonite, rock salt, and graphite, but only coal showed a similar structure to that observed in the meteorite. It was established that the radicals are primary constituents and are not due to the chemical processes used in treating the meteorite during its analysis and the extraction of carbon.

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ACCESSION NR: AP4034717

The authors conclude that the free radicals were formed either during the evolution of matter before formation of the meteorite or were formed in the meteorite before it reached the earth. The existence of such radicals must modify our opinion of the evolution of matter. Their presence is confirmation of earlier views that simpler organic compounds, chiefly through the radical reactions of polymerization, gave rise to more complex forms. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moscow (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

SUBMITTED: 24Feb64

DATE ACQ: 20May64

ENCL: 00

SUB CODE: ES, AA

NO REF SOV: 005

OTHER: 007

Card 2/2

ACCESSION NR: AP4012454

S/0078/64/009/002/0499/0501

AUTHORS: Yermakov, A. N.; Marov, I. N.; Yevtikova, G. A.

TITLE: Zirconium- and hafnium-complex formations with triacetonitrile

SOURCE: Zhurnal neorg. khim., v. 9, no. 2, 1964, 499-501

TOPIC TAGS: triacetonitrile, zirconium complexes, hafnium complexes, complexones, Zr-Hf complexes,

ABSTRACT: While inorganic complexes of Zr^{4+} and Hf^{4+} and their equilibrium and stability constants are known, nothing is known about their complexes with such wide spread substances as complexones. Therefore the authors undertook a study of Zr^{4+} and Hf^{4+} complex formation with triacetonitrile (TAN) in a strongly acidic medium and determined the compositions and the equilibrium constants of complex forming. In the tests, the ion exchange method was applied, and cation exchange resin KU-2 was used. Metal concentration ($Zr^{95}+Nb^{95}$, HE181) was 10^{-6} mol/l and acidity 1-2 mol/l $HClO_4$. TAN concentration varied between $0.4 \cdot 10^{-4}$ and $25 \cdot 10^{-4}$ mol/l; and its equilibrium concentration nearly equals the analytical. Tables of

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ACCESSION NR: AP4012454

experimental data were drawn up and corresponding curves plotted. It was found that in 1 and 2 mol solution of HClO_4 , complexes of 1:1 type are formed. Formation constants of HfA^+ and ZrA^+ are determined as $(0.68 \pm 0.03) \cdot 10^4$ and $(1.2 \pm 0.1) \cdot 10^4$ / 2 mol HClO_4 ; $(11.2 \pm 2.0) \cdot 10^4$ and $(27.4 \pm 2.6) \cdot 10^4$ / 1 mol HClO_4 , respectively. It was found that in the TAN interaction with Zr^{4+} and Hf^{4+} ions, three hydrogen ions are liberated. Orig. art. has: 1 Figure, 10 Formulas, 2 Tables.

ASSOCIATION: None

SUBMITTED: 25Jul63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: CH

NR REF SOV: 002

OTHER: 003

Card 2/2

VINOGRADOV, A.P.; VDOVYKIN, G.P.; MAROV, I.N.

Free radicals in the Migei meteorite. *Geokhimiia* no.5:395-398 My
'64. (MIRA 18:7)

1. Vernadsky Institute of Geochemistry and Analytical Chemistry,
Academy of Sciences, U.S.S.R., Moscow.

YERMAKOV, A.N.; MAROV, I.N.; BELYAYEVA, V.K.; KAZANSKIY, L.I.

State of hafnium oxychloride in aqueous solutions. Zhur. neorg.
khim. 9 no.10:2354-2358 O '64.

(MIRA 17:12)

L 9803-66 EWT(m)/ETC/EPF(n)-2/EWG(m)/EWP(j)/I/EWP(t)/EWP(b) LJP(c) DS/JD/VN/JG/
ACC NR: AT5026383 GS/RM SOURCE CODE: UR/0000/65/000/000/0294/0311 70

AUTHOR: Yermakov, A. N.; ⁵⁵Maroz, I. N.; ⁵⁵Belyayeva, V. K.; ⁵⁵Ryabchikov, D. I. 68
(Corresponding member AN-SSSR) 55 55 55 B+1

ORG: None

TITLE: Study of the complexing of ²⁷zirconium and ²⁷hafnium in solutions by the ion exchange method 55

SOURCE: AN SSSR. Institut geokhimii i analiticheskoy khimii. ⁵⁵Sovremennyye metody analiza; metody issledovaniya khimicheskogo sostava i stroyeniya veshchestv (Modern methods of analysis; methods of investigating the chemical composition and structure of substances), 294-311

TOPIC TAGS: zirconium, hafnium, zirconium compound, hafnium compound, ion exchange, chemistry technique, analytic chemistry

ABSTRACT: Despite the growing interest in the chemistry of zirconium and hafnium, few studies have been performed on their complexing with organic and inorganic substances. There are only few determinations of the composition and stability constants of complex compounds of zirconium, and no analogous data for hafnium. New methods of investigation have made possible a more thorough approach to the study of processes of complexing of zirconium and hafnium with various substances in solutions. The present review article gives the results of some of the experiments conducted by the authors on the equilibrium reactions

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UDC: 549.06

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ACC NR: AT5026383

2
of complexing of ions of zirconium and hafnium with inorganic and organic ligands. The behavior of these elements in sulfate, nitrate, and chloride solutions are studied. Oxalic acid, several carbonic and hydroxycarbonic acids, and other complexes were extracted from the organic substances. The authors used the ion exchange method to determine the compositions and the stability constants. Soviet ionites (KU-2 cationite and the EDE-10P anionite)¹⁵ were used in the experiments. Orig. art. has: 8 figures and 11 tables.

SUB CODE: 07 / SUBM DATE: 05Jul65 / ORIG REF: 030 / OTH REF: 032

Corr 2/2

RYABCHENKO, I.I. [deceased]; RYKOVA, L.E.; RYKOVA, Yul'ia; RYKOVA, L.E.;
YEREMIN, A.G.

Dokl. AN SSSR 1980 no. 4 (1981), pp. 16-18.

1. Institut polihimii i teorii nauki i inzh. V. I. Vernadskogo i inzh. Institut matematiki i inzh. (Kharbichikov).

RYABCHIKOV, L.I. [abstracted]; MAROV, I.N., DUBROV, Yu.N.; BELYAVINA, V.E.;
YERMAKOV, A.N.

Stopped complex-forming reactions studied by the electron
paramagnetic resonance method. Dokl. AN SSSR 166 no.3 1965-
626 1 Ja '66. (MIRA 1966)

1. Institut geokhimi i analiticheskoy khimii im. V.I.
Vernadskogo AN SSSR. Submitted July 19, 1965.

ACC NR: AP6036845

SOURCE CODE: UR/0020/66/171/002/0385/0388

AUTHOR: Marov, I. N.; Dubrov, Yu. N.; Belyayeva, V. K.; Yermakov, A. N.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, Academy of Sciences, SSSR (Institut geokhimi i analiticheskoy khimii Akademii nauk SSSR)

TITLE: Electron paramagnetic resonance of the iodide complex of Mo(V)

SOURCE: AN SSSR. Doklady, v. 171, no. 2, 1966, 385-388

TOPIC TAGS: molybdenum compound, EPR spectrum, iodide

ABSTRACT: The EPR spectrum of the iodide complex of Mo(V) was studied with an RE-1301 spectrometer at ~ 9000 Mc. In all cases, EPR signals with $g = 2.058 \pm 0.004$ were obtained. A study of the influence of various methods of preparation of the complex, concentration dependence and formation of mixed complexes (HI + HCl, HI + HBr) showed that the line with $g = 2.058$ belongs indeed to the iodide complex of Mo(V), which has the same composition and structure as other halide complexes of Mo(V). Thus, the g factor of the iodide complex is greater than that of the free electron, this being very unusual for ions with a single d electron. An attempt was made to obtain more detailed information on g factors by studying the EPR spectra of the iodide complex of Mo(V) at 77°K ; the values $g_1 = 2.258 \pm 0.005$ and $g_2 \approx 1.97$ were thus obtained. By using the average value of the g factor, g_0 and the relation

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UDC: 541.67+546.77+538.113

ACC NR: AP6036845

$g = 1/3 (g_0 + 2g_1)$, the value $g_1 = 1.955$ was obtained. Causes of the variation of g factors in the series of halide complexes of molybdenyl are discussed. This variation can be accounted for only by considering spin-orbital interactions on the ligand and the contribution of the electron transitions from bonding orbitals. The paper was presented by Academician Vinogradov, A. P., 14 May 66. Orig. art. has: 3 figures, 2 tables and 2 formulas.

SUB CODE: 07/ SUBM DATE: 14May66/ ORIG REF: 005/ OTH REF: 004
20/

Card 2/2

MAROV, K.G. (g. Sverdlovsk)

Increase the responsibility for the condition of railroad structures.
Put' i put.khoz. 5 no.4:30 Ap '61. (MIRA 14:7)
(Railroad bridges—Maintenance and repair)

30

MAROV, M.A.

MAROV, M. A.

Uchet finansovykh operatsii i sostavlenie bukhgalterskoi otchetnosti na promyshlennom predpriiatii s primeneniem schetnykh mashin [Computing financial operations and setting up bookkeeping in industrial enterprises with the use of computing machines]. Gosstatizdat, 1952. 104 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 7 October 1953

MAROV, M., jt. au.

Machine accounting in industrial enterprises. Moskva, Gosfinizdat, 1954. 180 p. (55-443)

HF5679.I 8

1. Machine accounting. I. Marov, M., jt. au.

MAROV, M.^A (Moskva)

Machine accounting on the state farm. Bukhg.uchet 14
no.6:38-45 Je '57. (MIRA 10:7)
(Machine accounting)

PODUARYEV, V.N., kand.tekhn.nauk, dotsent; MAROV, M.Ya., inzh.

Errors in machining on hydraulically controlled machine tools
caused by the nonrigidity of the system. Izv.vys.ucheb.zav.;
mashinostr. no.11:91-102 '60. (MIRA 14:1)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni N.E.
Baumana.

(Machine tools--Hydraulic driving)

PODURAYEV, V. N., kand. tekhn. nauk, dotsent; MAROV, M. Ya., inzh.

Forced vibrations of hydraulic power heads of automatic
lines. Izv. vys. ucheb. zav.; mashinostr. no.7:14-28 '62.
(MIRA 16:1)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche imeni
Baumana.

(Machine tools—Vibration)